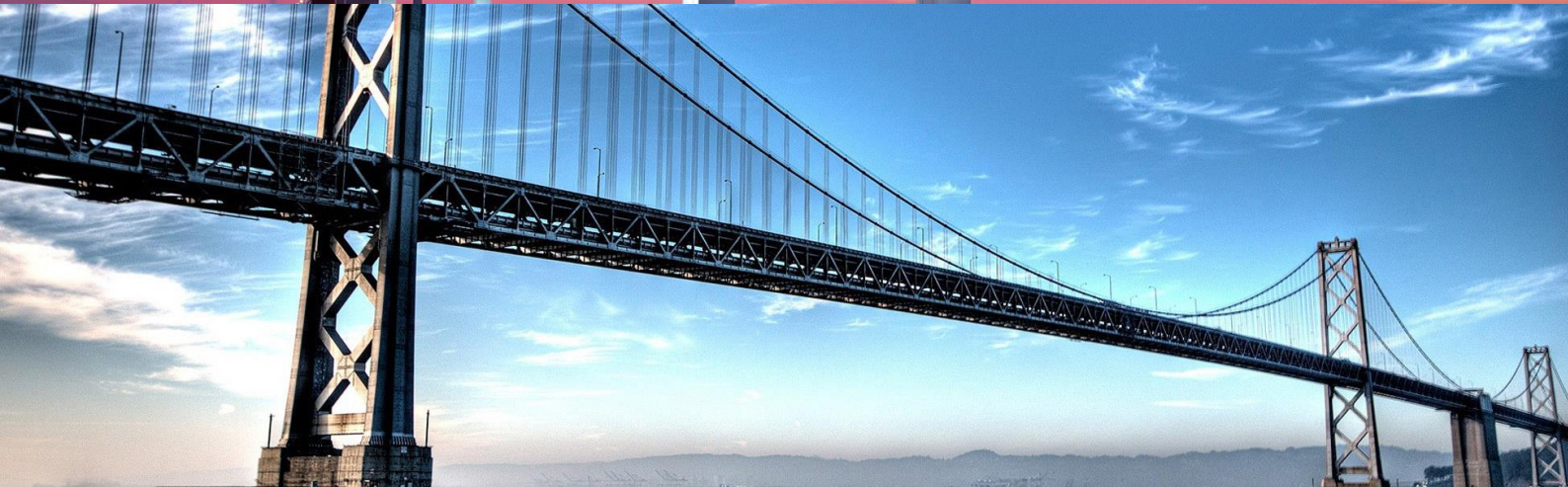


# ARFEN ELASTOMERIC BEARING



**ARFEN BRIDGE AND CONSTRUCTION TECHNOLOGIES**

**IND. TRADE. CO. LTD**

[www.arfen.com.tr](http://www.arfen.com.tr)

## **ARFEN BRIDGE AND CONSTRUCTION TECHNOLOGIES**

### **IND. TRADE. CO. LTD**

#### ***CORPORATE***

Arfen has started to operation from 1999 for create trust as a company that finds solutions to the customer's techinal needs and requirements.

Arfen made aggreements with international partners, so that brings international experiences to our country about brigde bearings, bridge expansion joints, seismic isolatars and post-tensioning etc.

Arfen as a construction material manufacturers, is exporting product to 35 countries internationally as well as nationally.

Arfen makes technical meetings with the customer to find solutionsand most economical design for their needs in the subject of Arfen. It also makes required applications and maintenances in the construction site if client requests.

Arfen is a technical manufacturer uses more than 21 years of engineering experience, which is a company in Turkey with name and patent rights of self-developed products. Arfen brings revenue to our country by exporting engineering products to 35 different countries.

Arfen makes design and production to meet the requirements of international standards under ISO-9001 Quality Management System.

Arfen provides more economical alternatives for customers with experienced engineers and high technical knowldge.

All bearings are manufactured according to EN-1337-3 and all isolators are manufactured according to EN-15129. Bearings and isolatars can be manufactured according to different national standards as well, if customer requests. All other products are manufactured in accordance to TSE (Turkish Standard Institue) and international standards. Quality control tests are carries out in the Arfen laboratory.

We will continue to give service to "Finding Solution" for our customers.

**Arfen Bridge and Construction Technologies Ind. Trade. Co. Ltd.**

## ELASTOMERIC BEARINGS

ARFEN Bridge's elastomeric bearings are fabricated of natural rubber or neoprene. Designed and sized to meet the needs of your structure. These bearings are rigid enough to transmit the necessary loads and flexible enough to permit the rotation and movements required by the structure. They can also be used for vibration and earthquake motion control applications.

-NR means Natural Rubber

-CR means Neoprene Rubber

### QUALITY OF THE MATERIALS

The elastomeric bearings manufactured at our premises meet various national and international design and quality standards (BS, AASHTO, DIN, EN, etc.). Appropriately formulated and mixed neoprene or natural rubber and carefully treated steel plates enable good bonding and production of high quality bearings. We adhere to continuous inspections during manufacturing and various in house tests at each production stage.

### NATURAL & NEOPRENE RUBBER (NR & CR) COMPOUND: EN 1337-3

NR & CR POPERTIES				
Test Name	Relevant Standart	Eq. Standard	Unit	Spec. Value
Hardness	ISO 48 / METHOD N	ASTM D2240	ShrA	60±5
Specific Gravity	ISO 2781 / METHOD A	-	g/cm <sup>3</sup>	-
Tensile Strength	ISO 37 / TYPE 2	ASTM D412	N/mm <sup>2</sup>	≥16
Elongation at Break	ISO 37 / TYPE 2	ASTM D412	%	≥425
Tear Strength	ISO 34-1 / METHOD A	ASTM D624	N/mm	CR ≥10 NR ≥8
Compression Set Resistance (70°C, 24 hours)	ISO 815 / TYPE 4	ASTM D395	%	CR ≤15 NR ≤30
Rubber-Metal Bond Strength	ISO 813 / 6x25x125 mm	ASTM D429	N/mm	≥7
Ageing	ISO 188	ASTM D573	(NR: 70°C, 168h / CR: 100°C, 72h)	
Increase in Hardness	ISO 48 / METHOD N	ASTM D2240	ShrA	NR: - 5 / + 10 CR: ±5
Change in Tensile Strength	ISO 37 / TYPE 2	ASTM D412	%	±15
Change in Elongation	ISO 37 / TYPE 2	ASTM D412	%	±25
Ozone Resistance (NR: 40±2°C 25 pphm, 96h, %30 / CR: 40±2°C 100 pphm, 96h, %30)	ISO 1431-1 / METHOD A	ASTM D1149	%	No Cracks

## INTERNAL STEEL LAMINATES

The internal steel laminates S235 for the laminated elastomeric bearing pads shall comply with the appropriate standard given in EN 10025

## SYSTEM DETAILS

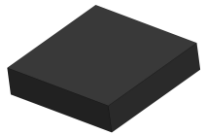


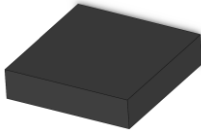


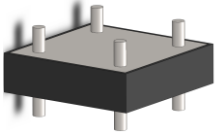
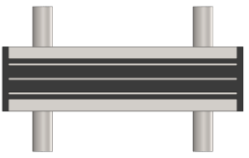
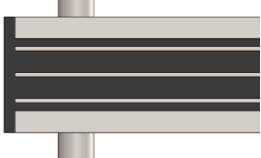
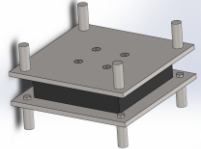

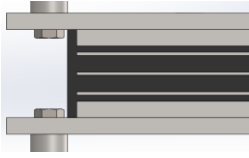
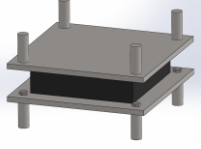


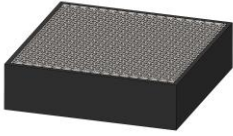


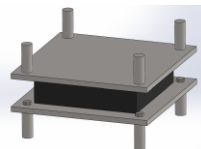
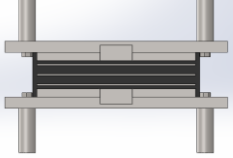
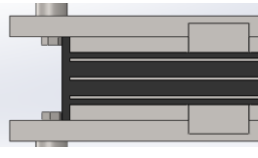
Elastomeric bearings are blocks of elastomeric rubber pad layers topped with steel plates that are bonded via vulcanization process. These bearings are the connection devices between a bridge structure and its support, and should make the followings possible through elastic deformation of neoprene: - Transmission of normal forces; - Horizontal movements; - Rotation of the structure in any direction; - Transmission of horizontal forces, within defined limits. It may also be provided with a sliding plane to enable large movements of the structure and also having one or two horizontal movement locking systems.

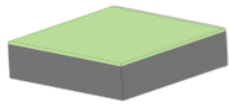


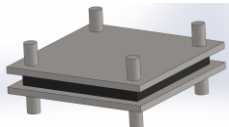

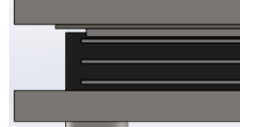
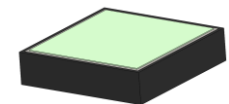

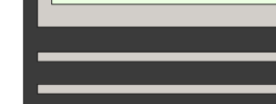
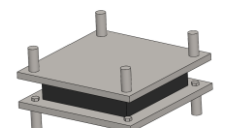

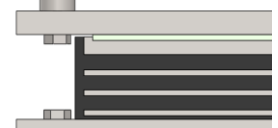



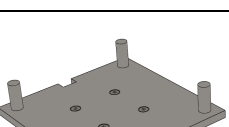

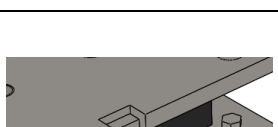
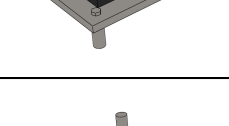
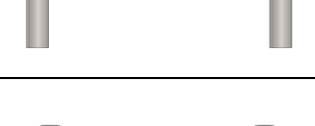

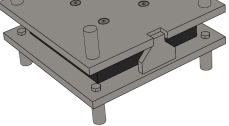

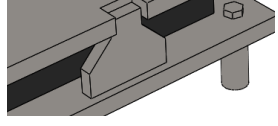


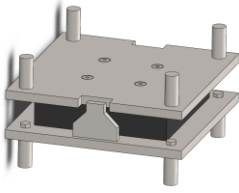
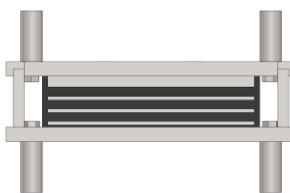
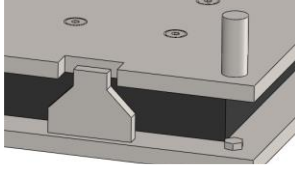
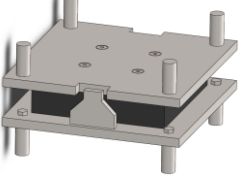
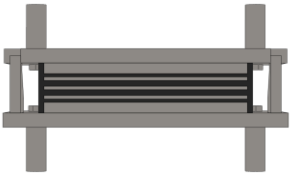
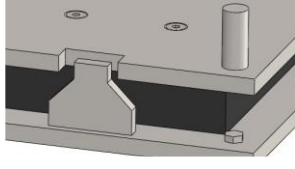
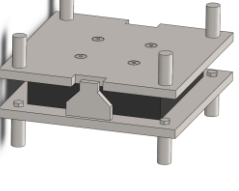

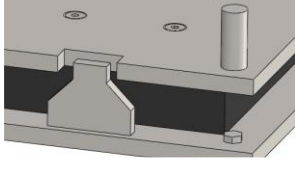
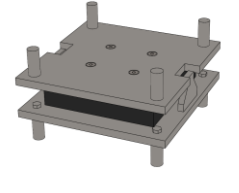

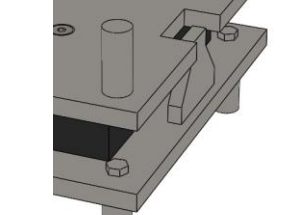
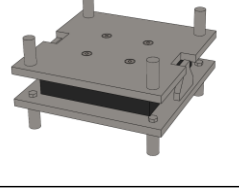
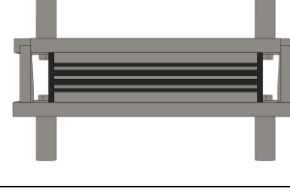
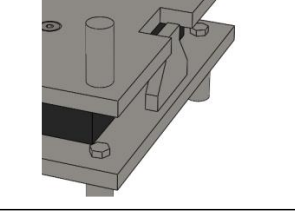
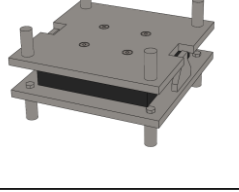

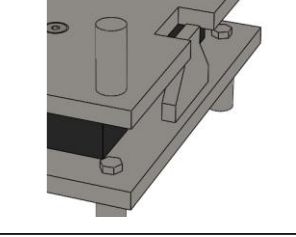
ARFEN Bridge's Elastomeric bearings are designed, manufactured and tested in accordance of international standards, such as BS 5400 DIN 4141 TS EN 1337-3 and AS 5100-4. Every single component is mechanically worked and assembled by fully qualified and trained workers at the ARFEN factory under strict ISO 9001:2008 quality control standards.



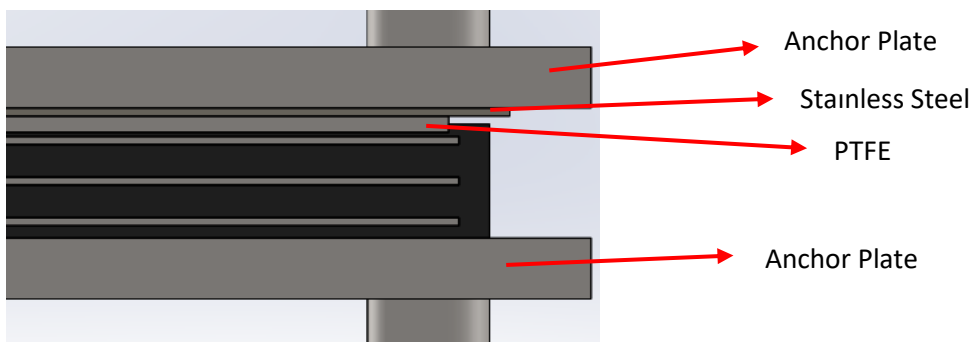
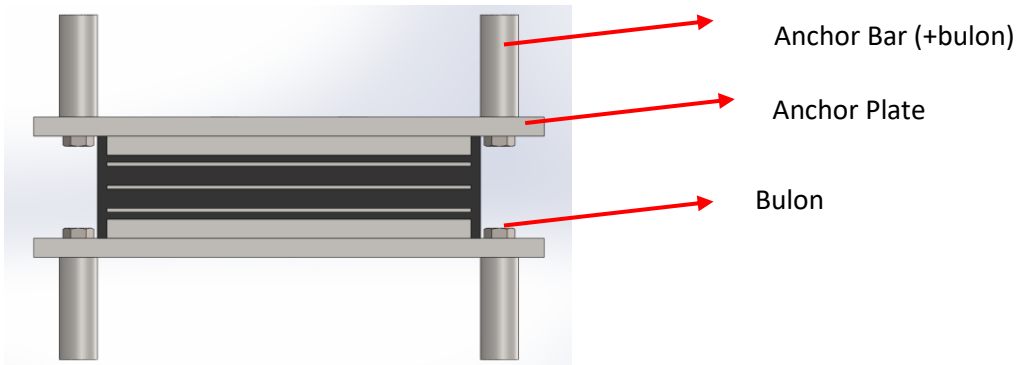
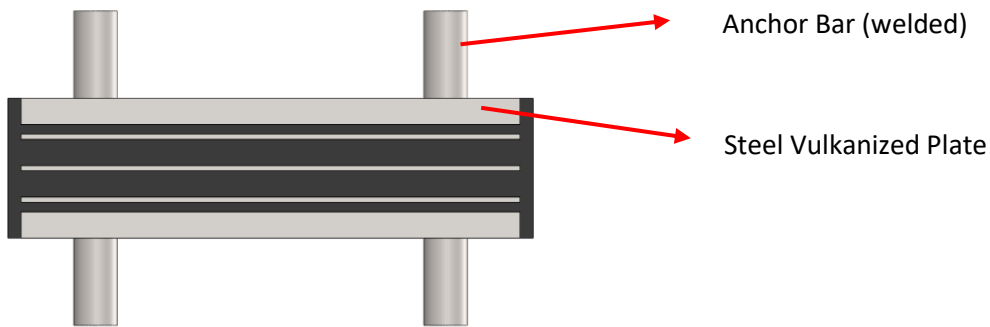
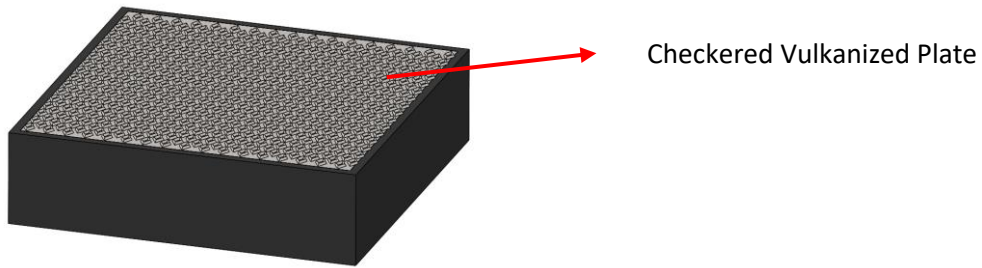
# ELASTOMERIC BEARING TYPES:

TYPE	GENERAL	SECTION	SECTION DETAIL	INFORMATION
A				Elastomeric bearing with a steel sheet inside, covered with rubber.
B				Rubber covered elastomeric bearing with more than one steel sheet according to the design.
C1				Elastomeric bearing with outer steel plates vulcanised.
C2				Elastomeric bearing formed by combining steel vulcanized plates + anchor plates. Steel plates are connected by bolts.
C3				Rubber covered support is combined with anchor plate.
C4				Elastomeric bearing formed with checkered vulcanized steel plates.
C5				Elastomeric bearing formed by combining vulcanized steel plate and anchor plate on the support with a pin.

TYPE	GENERAL	SECTION	SECTION DETAIL	INFORMATION
D1				Elastomeric bearing completely covered with PTFE outer surface.
D2				PTFE is placed in the dimensions given to the rubber covered elastomeric bearing. Stainless steel is attached to the bottom of the anchor plate.
E1				PTFE was placed on the steel vulcanized sheet.
E2				PTFE was placed on the steel vulcanized plate. There is an anchor plate on the upper, which is combined with stainless steel.
F				TypeF elastomeric bearing consists only of rubber.
G1				Fixed support. Thanks to the stopper on both sides, it is held in all directions and no movement is allowed in any direction. The lower surface is covered with rubber and the upper surface is a vulcanized steel plate.
G2				Fixed support. Thanks to the stopper on both sides, it is held in all directions and no movement is allowed in any direction. Bottom and top surface steel vulcanized plate.
G3				Fixed support. Thanks to the stopper on both sides, it is held in all directions and no movement is allowed in any direction. The lower and upper surfaces are covered with rubber.


TYPE	GENERAL	SECTION	SECTION DETAIL	INFORMATION
H1				Longitudinal movement bearing (uni-directional). Thanks to the stopper on both sides, it is held in transverly directions and no movement is allowed transverly direction. The lower surface is covered with rubber and the upper surface is a vulcanized steel plate.
H2				Longitudinal movement bearing (uni-directional). Thanks to the stopper on both sides, it is held in transverly directions and no movement is allowed transverly direction. Bottom and top surface steel vulcanized plate.
H3				Longitudinal movement bearing (uni-directional). Thanks to the stopper on both sides, it is held in transverly directions and no movement is allowed transverly direction. The lower and upper surfaces are covered with rubber.
J1				All-way movement bearing. It is stopped by stopper after the specified displacement. Thanks to the stopper on both sides, it is held in all directions and after this movement no movement is allowed in any direction. The lower surface is covered with rubber and the upper surface is a vulcanized steel plate.
J2				All-way movement bearing. After the specified displacement, it is stopped with a stopper. Thanks to the stopper on both sides, it is held in all directions and after this movement no movement is allowed in any direction. Bottom and top surface steel vulcanized plate.
J3				All-way movement bearing. It is stopped by stopper after the specified displacement. Thanks to the stopper on both sides, it is held in all directions and after this movement no movement is allowed in any direction. The lower and upper surfaces are covered with rubber.

It can also be prepared circularly of any type given above.





# CERTIFICATE :


**TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.**  
 Technical and Test Institute for Construction Prague, S0E  
Asesmentová zkušební laborator / Asesorovaniho ustava, Notifikovaná osoba, Oznameny subjekt, Služby pro technickou posouzení, Certifikační orgán, Inspekční orgán / Accredited Testing Laboratories, Authorized Body, Notified Body, Technical Assessment Body, Certification Bodies, Inspection Body - Prosecká 811/76a, Proušek, 190 00 Praha 9 - Proušek, Czech Republic

Notified Body 1020

## CERTIFICATE OF CONSTANCY OF PERFORMANCE

No. 1020 – CPR – 090-046913

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), the certificate applies to the construction product:

**STRUCTURAL BEARING**  
variant: AR-BE elastomeric bearing

Type of rubber: CR, NR  
Type A – laminated bearing fully covered with elastomer comprising only one steel reinforcing plate;  
Type B – bearing fully covered with elastomer comprising at least two reinforcing plates; Type C – laminated bearing with outer steel plates (profiled or allowing fixed); Type D – Type B with PTFE sheet bonded to the elastomer; Type E: Type C with one outer plate bonded to the elastomer and PTFE sheet recessed in the steel; Type F – plain pad bearings and strip bearings  
with dimensions in plan less or equal to 1230x1200mm, for minimum operating temperature of -25°C

placed on the market under the name or trade mark of

**ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN. TIC. LTD. ŞTI.**  
 Identification No.: 0740505669  
 Address: Çerkeşli OSB Mah. İmes 3 Bulvarı No:27 Dilovası / KOCAELİ, Turkey

and produced in the manufacturing plant

**ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN. TIC. LTD. ŞTI.**  
 Identification No.: 0740505669  
 Address: Çerkeşli OSB Mah. İmes 3 Bulvarı No:27 Dilovası / KOCAELİ, Turkey


This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard


**EN 1337-3:2005**

under system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the constancy of performance of the construction product.

This certificate was first issued on 21 February 2020 and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

The stamp of the Notified Body 1020  
 Prague, 21 February 2020

  
 Martin Pešek  
 Deputy Manager of the Notified Body


**TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.**  
 Technical and Test Institute for Construction Prague, S0E  
Asesmentová zkušební laborator / Asesorovaniho ustava, Notifikovaná osoba, Oznameny subjekt, Služby pro technickou posouzení, Certifikační orgán, Inspekční orgán / Accredited Testing Laboratories, Authorized Body, Notified Body, Technical Assessment Body, Certification Bodies, Inspection Body - Prosecká 811/76a, Proušek, 190 00 Praha 9 - Proušek, Czech Republic


Notified Body 1020  
Branch Office 0900 – Technical and engineering services

## SURVEILLANCE REPORT

In compliance with Regulation (EU) 305/2011 of the European Parliament and of the Council (the Construction Products Regulation or CPR), Annex V replaced by the Commission Delegated Regulation (EU) No 568/2014, system 1


No. 090-051300  
Trade Name:  
**Structural bearings**  
Variant: elastomeric, Guide bearings and Restraint bearings  
Holder of the certificate:

**ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN. TIC. LTD. ŞTI.**  
 Identification No.: 0740505669  
 Address: Çerkeşli OSB Mah. İmes 3 Bulvarı No:27 Dilovası / KOCAELİ, Turkey  
 Production plant: ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN. TIC. LTD. ŞTI.  
 Address: Çerkeşli OSB Mah. İmes 3 Bulvarı No:27 Dilovası / KOCAELİ, Turkey  
 Order: Z090190447  
 Certificate Number: 1020–CPR–090-046913, 1020–CPR–090-046915  
 Number of pages including cover page: 4      Number of pages of Annexes: 0  
 Responsible Person for content of this Report:

  
 Roman Ondruška  
 Head Assessor

Responsible Person for correctness of the Report:

Stamp of the Notified Body 1020  
 Prague, 15<sup>th</sup> March 2021

  
 Ing. Jozef Póbiš  
 Manager of the Notified Body

Warning: Without permit of Deputy Manager of the Notified Body this report mustn't be duplicated other way than as a complex.

Technical and Test Institute for Construction Prague, Branch 0900-TIS, Prosecká 811/76a, 190 00 Praha, Czech Republic  
 Tel: +202 019 400, Fax: +202 266 891 965, Internet: +420 266 891 965, e-mail: blaizova@tzus.cz, www.tzus.cz  
 Bank Name: KB Praha 1 Czech Republic, Account number: 1501-593101000100-0001593100-VAT: CZ000164229



## TÜRK STANDARLARI ENSTİTÜSÜ

### TÜRK STANDARLARINA UYGUNLUK BELGESİ

## TURKISH STANDARDS INSTITUTION

### CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS

Markname / Trade Description of the Mark  
**TSE** 


<b>BELGE NUMARASI</b> REFERENCE NUMBER OF LICENCE	134087-TSE-01/01
<b>BELGENİN İLK VERİLGİ TARİHİ</b> DATE OF FIRST ISSUE OF LICENCE	21.08.2019
<b>BELGENİN SON GEÇERLİLİK TARİHİ</b> LICENCE VALID UNTIL	27.11.2021
<b>BELGE SAHİBİ KURULUŞUN ADI</b> NAME OF THE LICENCE HOLDER	ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN.TIC.LTD.ŞTI.
<b>BELGE SAHİBİ KURULUŞUN ADRESİ</b> ADDRESS OF THE LICENCE HOLDER	ÖMERLİ MAHSEMİT GÜLCE SK. D.1 NO:22 ARNAVUTKÖY İSTANBUL/TÜRKİYE
<b>ÜRETİM YERİ ADI</b> NAME OF THE MANUFACTURING PLACE	ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN. TIC. LTD. ŞTI. DİLOVASI ŞUBESİ
<b>ÜRETİM YERİ ADRESİ</b> ADDRESS OF THE MANUFACTURING PLACE	ÇERKEŞLİ OSB. MAH. İMES 3 BULVARI NO:27 KOCAELİ / TÜRKİYE
<b>İPTAL EDİLEN BELGE NUMARASI (Varsa)</b> INDICATION OF SUPERSEDED LICENCE (if any)	
<b>TESCİLLİ TİCARİ MARKASI</b> REGISTERED TRADE MARK	ARFEN
<b>İLGİLİ TÜRK STANDARDI</b> RELATED TURKISH STANDARD	TS ISO 8446 / 19.01.1996
<b>BELGE KAPSAMI</b> SCOPE OF LICENCE	

Laskı Memnûn - Köprü mesnetleri  
 - Köprüden kaçuık (CR), Sınıf 1, Sınıf 2, Sınıf 3, Sınıf 4, Sınıf 5, Takviyeli Mesnet  
 - Doğal kaçuık (NR), Sınıf 1, Sınıf 2, Sınıf 3, Sınıf 4, Sınıf 5, Takviyeli Mesnet

e-muzaka signed  
 27.10.2020  
 Belgeleme Merkezi Başkanı Adına  
**AHMET NURSI KARTAL**  
 TSE İSTANBUL BELGELENDİRME MÜDÜRÜ

\*Bu belge, belgeleme sürecü, ürün yolları değişiklikleri hakkında yerli pazarlama için geçerlidir.  
 \*Bu belge, tüm ticari belgelerden ayrı olarak değerlendirilmelidir. Herhangi bir değişiklik, belgeyi geçersiz kılar.  
 \*Bu belge, belgeleme sürecü, ürün yolları değişiklikleri hakkında yerli pazarlama için geçerlidir.  
 \*Bu belge, tüm ticari belgelerden ayrı olarak değerlendirilmelidir. Herhangi bir değişiklik, belgeyi geçersiz kılar.


<http://www.tzus.com.tr>




## WELDING CERTIFICATE

Certificate No.: 0408-CPR-TA02905

<b>Manufacturer</b>	<b>ARFEN KÖPRÜ VE YAPI TEKNOLOJILERI SAN. TIC. LTD. ŞTI. Çerkeşli OSB Mahallesi İmes 3 Bulvarı No:27 Dilovası / KOCAELİ / TÜRKİYE</b>
<b>Factories</b>	see above
<b>Standard</b>	EN 1090-1:2009+A1:2011 EN 1090-2:2018 Up to EXC 2
<b>Execution Classes</b>	
<b>Welding Processes (According to ISO 4063)</b>	141 - Tungsten Inert Gas Welding 135 - Metal Active Gas Welding
<b>Parent Metals</b>	S235 -S275-S355 and AISI 316 acc. to EN 1090-2, Table 2 and 3
<b>Responsible Welding Coordinator</b>	Talat CANKUR, 10.07.1993, IWE
<b>Deputies</b>	-
<b>Confirmation</b>	It is confirmed that all procedures for the execution and supervision of welding work are available.
<b>Remarks</b>	This welding certificate is only valid within the scope of and in connection with FPC Certificate No.: 0408-CPR-TA02905
<b>Valid from</b>	<b>13.03.2019</b> (first day of issue)
<b>Next Surveillance</b>	<b>12.03.2021</b>

Leonding PLACE **18.06.2020** DATE  
  
 Mastiřak Alexander DJ  
 CERTIFICATION BODY

**TÜV AUSTRIA SERVICES GMBH**  
 Deutschstraße 10  
 A-1230 Wien

  
 QR Code



ISO6446



## Accredited 3.rd Party Tests

**KOÇGEB KALITE YÖNETİM SİSTEMİ**  
PLASTİK-KAUCUK LABORATUVARI TEST RAPORU




Sayfa No: 1/1

**FİRMA ADI / ADRESİ / NUMUNE ADI**  
: YSE YAPI SAN. VE TİC. A.Ş.  
: Karahdır Köyü Girişi - BURSA  
: -200x200x2.5mm. boyutlarında kauçuk test plakası-(3 Adet)  
: -428mm. kalınlığı 12.2mm. olan kalıcı deformasyon test diski-(3 Adet)  
**PROJE NUMUNE YERİ**  
: Bursa- Yenisehir Halk Tiraş Fabrikası  
**NUMUNE KAYIT TARİHİ**  
: 24.06.2014  
**RAPOR TARİHİ**  
: 02.07.2014  
**RAPOR NO**  
: 2014 - 8444

Laboratuvarımıza gelen kauçuk numunede istenilen doğrultusunda testler yapılmış olup, sonuçlar aşağıda belirtilmiştir.

YAPILAN TEST	TEST METODU	BİRİM	TEST SONUCU
- Sertlik	TS ISO 7619-1	Shore A	60
- Kopma Mukavemeti	TS ISO 37 (Numune Tip 1)	N/mm <sup>2</sup>	20,9
- Kopma Uzaması	TS ISO 37 (Numune Tip 1)	%	498
- Yırtılma Mukavemeti	TS 4698-ISO 34-1 (Metot B)	N/mm	53,9
- Kalıcı Deformasyon (100°C - 24 Saat)	TS 4595 - ISO 815 (Numune Tip A)	%	20
- Havada Yaşlandırma (70°C - 168 saat)	TS ISO 188 (Metot B)		
- Sertlik Değişimi	TS ISO 7619-1	Shore A	+ 3
- Kopma Mukavemeti Değişimi	TS ISO 37 (Numune Tip 1)	%	- 12
- Kopma Uzaması Değişimi	TS ISO 37 (Numune Tip 1)	%	- 15

\* Kalıcı Deformasyon testi için;  
- ASTM Tip 1= ISO Tip A numune ve 9,38 mm yüksekliğinde mesafe ayarlayıcı kullanılmıştır.  
\*\* Testler sırasında Laboratuvar Sıcaklığı: 22-23°C, Bağıl Nem: 60-61% arasında değişmiştir.

<b>BENEY YAPANLAR</b>	<b>KONTROL EDEN</b>	<b>ONAY</b>
 Ayhan ATES Teknisyen	 Furkan KUL KOBİ Uzmanı	 Kadriye KUSCU KOBİ Uzmanı

**ACIKLAMALAR**  
1. KOÇGEB tarafından "KALİTE YÖNETİM SİSTEMİ" saygınlığına sahiptir. GİRİŞİMİZLERİ  
2. Raporun 1. bölümünde belirtilen numune ve ölçümler için kullanılmıştır.  
3. Testler sırasında Laboratuvar Sıcaklığı: 22-23°C, Bağıl Nem: 60-61% arasında değişmiştir.

**KOÇGEB BURSA HİZMET MERKEZİ SÜDÜRLÜĞÜ**  
Çaylar Mahallesi 2 Sokak KOÇGEB Binası No: 12 16120 Nispetiye / BURSA  
Telefon: 0 224 443 74 74 Faks: 0 224 443 74 68 e-mail: bursa@koceg.gov.tr http://www.koceg.gov.tr

Form No: 7842 000003 02.07.2014 Sayfa No: 1/1

18-13 10-07 FROH- T-804 P0003/0009 F-655

**KARAYOLLARI GENEL MÜDÜRLÜĞÜ**  
Araştırma ve Geliştirme Dairesi Başkanlığı  
Mekanik Laboratuvarı  
İnönü Bulvarı 06100 Yücetepe / ANKARA

**Deneysel Raporu**  
Test Report

Sayfa 3/5

h) (0,1%Nmax) Valsi Deformasyon Şekli : Normal, herhangi bir dilsizlilik yok.  
i) (1,0%Nmax) Valsi Deformasyon Şekli : Normal, herhangi bir dilsizlilik yok.  
ğ) (1,0%Nmax) Valsi Gözle Muayene : Yüzüne, patlama, kabuk olma, parçalanma yok.

**2.3. Basınç Yıkılı Altında Çökme (Yaplandırma Sonrası),**

a) Test Edilen Mazeret Sayısı : 2  
b) Yaplandırma Şekli : 70°C - 7 gün  
c) Gözle Muayene : Herhangi bir yitilme, parçalanma veya dilsizlilik yok.

d) (0,1%Nmax) Valsi Çökme : (0,1%Nmax) Valsi Çökme  
Minimum (mm) : 0,20 Minimum (mm) : 1,00  
Maksimum (mm) : 0,32 Maksimum (mm) : 1,05  
Ortalama (mm) : 0,30 Ortalama (mm) : 1,02  
Ortalama (%) : 0,76 Ortalama (%) : 2,64

e) (0,1%Nmax) Valsi Deformasyon Şekli : Normal, herhangi bir dilsizlilik yok.  
f) (1,0%Nmax) Valsi Deformasyon Şekli : Normal, herhangi bir dilsizlilik yok.  
g) (1,0%Nmax) Valsi Gözle Muayene : Yüzüne, patlama, kabuk olma, parçalanma yok.

**2.4. Kauçuk - Lâktil - Tezeler (Yaplandırma Öncesi)**  
**2.4.1. Kauçuk-Çelik Plaka Yapışma Dayanımı (Adana)**

a) Sırtlanma Değeri (Mn) (N/mm) : 7  
b) Test Edilen Numune Sayısı : 3  
c) Yapışma Dayanımı (mm) : 28205  
d) Yıkılma Hızı (mm/dak) : 300  
e) Deneysel Sonuçları : Mf1 : 10,4 Max : 18,3 Ort : 14,2  
f) Deneysel Sonuçların Uygunluğu : UYUŞUN

**2.4.2. Kauçuk Sertliği ( Shore-A meter ile ) (Yaplandırma Öncesi)**

a) Sırtlanma Değeri : 00 ± 6  
b) Proje Değeri : 00 ± 6  
c) Deneysel Sonuçları : Mf1 : 00 Max : 01 Ort : 00  
d) Deneysel Sonuçların Uygunluğu : UYUŞUN

**2.4.3. Kauçuk Kopma Dayanımı-Kopma Uzaması (Yaplandırma Öncesi)**

Sırtlanma Değeri	Kopma Dayanımı (Mn)	(N/mm <sup>2</sup> ) (%)	Kopma Uzaması (Mn)	(%)	Yıkılma Hızı (mm/dak)
		13		400	300

Özellikler: 13 (N/mm<sup>2</sup>) / 400 (%) / 300 (mm/dak)

Yapılabilecek diğer testler için detaylı keşifler için lütfen iletişime geçiniz.  
Araştırma ve Geliştirme Dairesi Başkanlığı, TMMOB  
Mekanik Laboratuvarı, İnönü Bulvarı 06100 Yücetepe / ANKARA

**Test Report**

Tanım	Değer	Tanım	Değer	F-ASTM D412C
İs (Genel)	378	Ürün	Bursa-Tençer Halk Tiraş Projesi	Standart
Lot	2	Ürün Kodu	Original Data	Eklenmemiş
Herman	2	İstemi	YSE YAPI SAN VE TIC. A.Ş.	Evet
Asama	6941	Müşteri Kodu	Ayhan ATES	Yükümlü
Tarih	25/06/2014	Kullanıcı		Test 10000N
Metodlar	TCC 201092			
Sıcaklık	23°C			
Nem	60%			

**Örnek**

Örnek	Wt	TS	Ey	TSb	Eb	Se 50/	Se 100/	Se 300/	Se 200/	Se 400/	Se 500/
	mm2	N/mm2	%	N/mm2	%	N/mm2	N/mm2	N/mm2	N/mm2	N/mm2	N/mm2
1	13,98	21,01	498,21	21,01	498,21	1,17	2,15	9,95	5,56	15,10	14,57
2	14,40	20,35	491,76	20,35	491,76	1,20	2,23	9,72	5,70	14,55	13,91
3	14,64	20,13	489,16	20,13	489,16	1,31	2,28	10,08	5,80	15,20	0,00
4	14,70	21,19	505,52	21,19	505,52	1,21	2,17	10,13	5,63	15,21	20,91
5	15,12	20,86	516,96	20,86	516,96	1,29	2,30	10,12	5,80	14,83	20,06
Max	15,12	21,15	516,96	21,15	516,96	1,31	2,32	10,13	5,80	15,31	20,91
Min	13,98	20,13	489,16	20,13	489,16	1,17	2,15	9,72	5,56	14,55	13,91
Ort	14,57	20,70	490,13	20,70	490,13	1,24	2,23	10,00	5,76	15,02	17,36
St.eap	0,4187	0,4392	11,2495	0,4392	11,2495	0,0718	0,1722	0,1055	0,2566	0,3632	
Cp											
Medyan	14,54	20,86	498,21	20,86	498,21	1,21	2,23	10,08	5,70	15,10	17,31

Özellikler: 13 (N/mm<sup>2</sup>) / 400 (%) / 300 (mm/dak)

GİBTE INSTRUMENTS a.Ş. tarafından teslim edilmiştir.

# Bearing Manufacture Certificates

## TEST REPORT ON SHORE HARDNESS

Client	Team International Engineering & Management Consultants Basra, Iraq.		
Sample Description	Bearing Pads & Joints	Lab Report No.	WLRP20-2410/10
Source	Team International Engineering & Management Consultants	Sample No.	WSP20-2410/2
Material	Rubber	Date Received	05/09/2020
Test Method	ISO 48-4:2018	Date Tested	07/09/2020
Equipment Type	Durometer Shore A	Date Reported	16/09/2020
Equipment Model	SHR-A-GOLD	Test condition	Temperature: 23°C Relative Humidity: 50%
Serial Number	23167	Specimen thickness	6.50mm
Mean of Testing	Manual	No of pieces piled	1 No.
Indentation Hardness Time	1 second	Tested By	SI

### Test Results

Test	Readings	Result
Shore A Hardness	61,62,62,63,62	A/62/1

Remarks: None.

Signed for and on behalf of Wimpey Laboratories

Visakh S Nair

Laboratory Supervisor

Test results relate only to the samples tested

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-End of text-



## Test Report

- |                         |   |                   |               |
|-------------------------|---|-------------------|---------------|
| 1. Issue No. :          | CMT2017 - 3113                                  | 5. Receipt date : | Oct, 18, 2017 |
| 2. Applicant :          | ARFEN FACTORY                                   | 6. Issued date :  | Nov, 13, 2017 |
| Address :               | Arfen kopru ve Yapı Teknolojileri San. Tic. Sti |                   |               |
| Name :                  | Hasankeyf Bridges                               |                   |               |
| 3. Teste purpose :      | Maintenance of quality                          |                   |               |
| 4. Sample Description : | Elastomeric Bearing Ø750 x 231mm                |                   |               |

### Test results :

No	Test Item	Condition	Unit	Test methods	Results
1	Shear modulus test	Vertical Load : 2 651 kN Displacement : 112 mm Speed : 150mm / min	MPa	Project Specification EN - 1337	1.044
2	Compression Stiffness test	Vertical Load : 2 550 kN	-		Not Deflected

Project Name : BATMAN HASANKEYF BRIDGE

Owner : TURKISH GENERAL DIRECTORATE OF HIGHWAYS

Constructor : NUROL-CENGİZ CONSTRUCTION COOPERATION

Tester : Park,Geunyoung

Technical

Manager : Shin, Dochul

Tel : 031-669-0665

Tel : 031-646-0801

The results shown in this report refer only to the sample(s) submitted by applicant. This test report cannot be reproduced or used other than the test purpose stated in above.

**SGS Korea Co., Ltd.**  
**Construction Materials Testing Center**

Address : 20, Dongtangseon 10-gil, Dongtan-myeon, Heungju-si, Gyeongsang-do, Korea, 18467 TEL: 82-31-669-0600  
 Note : In case Technical Manager's name is not mentioned, test result is not valid.

Page 1 of 1

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## Wimpey Labs. L.L.C Dubai

## SGS Korea Labs. Korea



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Bursa Teknoloji Koordinasyon ve Ar-Ge Merkezi

**TÜRKİYE**  
T.C. MİLLÎ EĞİTİM BAKANLIĞI  
T.C. MİLLÎ ARAŞTIRMA VE TEKNOLOJİ AKADEMİSİ

**TEST RAPORU**  
TESTING REPORT

AB-1286-Y  
2020-0160-133  
21.02.2020

Müşterinin Adı/Adresi Customer name/address	Arfen Köprü ve Yapı Teknolojileri San. Tic. Lm. Şti. Çankaya O.S.B. İMES 3 Bulvarı No:27 Döğes / KOCATEPE - TÜRKİYE
Müşteri Yetkilisi Customer responsible	Ökden Çelebi
İç Giriş Numarası Sample registration number	2020-0160
Namunenin Cinsi The type of the sample	Rubber
Namunenin Laboratuvara Kabul Tarihi The date of receipt of the test item	17.02.2020
Testlerin Yapıldığı Tarih Aralığı Date of tests	17.02.2020 - 21.02.2020
Namunenin Müşteri Tanımlaması ve Görseli Customer identification of the sample and image	1. NR6100

**Açıklamalar**  
Remarks

Namune alına giden ve numune tazmin müşteri tarafından yapılmıştır.  
Sampling processing and sample identification are made by the customer.

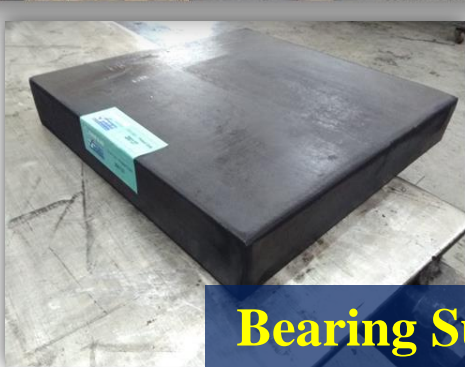
Deney laboratuvarı olarak faaliyet gösteren BUTEKOM A.Ş. TÜRKİYE AB-1286-Y akreditasyonu numarası ile TS EN ISO/IEC 17025:2017 akreditasyonu almıştır. Bu Akreditasyon Kurumunun (TÜRKAK) deney raporlarını teminleyici kurumunda Akademi Akademiye Birliği (EAB) ile Çuk. Tarh. Andirna akreditasyonu Laboratuvar Akreditasyon Birliği (LAB) ile birlikte deney raporlarını teminleyicileridir. Deney raporu için teminler, TS EN 15866:2019 akreditasyonu ile ilgili olarak Butekom A.Ş. tarafından TÜRKAK under AB-1286-Y registration number for TS EN ISO/IEC 17025:2017 test laboratory, Turkish Accreditation Agency (TÜRKAK) is a signatory to the European Convention for Accreditation (EAC) Multilateral Agreement (MLA) and to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the recognition of test reports. The testing and/or measurement results are ISO and IAF confidence intervals uncertainty of acceptable and test methods are given in the report.

Raporlar (1) ispatlı olan deney ve analizler TS EN ISO/IEC 17025:2017 kapsamında akreditatordur.  
Tests and analysis method and (1) in the report are approved under TS EN ISO/IEC 17025:2017

Mühür Stamp	Tarih Date	Test Sayı The Count of Test	TTMM Mühürü Stamp of TTMM
BUTEKOM BURSA TEKNOLJİ KORDİNASYON VE AR-GE MERKEZİ M. ARGE MÜDÜRLÜĞÜ Gözetim ve Kalite Kontrol Birimi T.C. MİLLÎ EĞİTİM BAKANLIĞI T.C. MİLLÎ ARAŞTIRMA VE TEKNOLOJİ AKADEMİSİ T.C. MİLLÎ EĞİTİM BAKANLIĞI T.C. MİLLÎ ARAŞTIRMA VE TEKNOLOJİ AKADEMİSİ T.C. MİLLÎ EĞİTİM BAKANLIĞI T.C. MİLLÎ ARAŞTIRMA VE TEKNOLOJİ AKADEMİSİ	17.02.2020	Müşteri İZİMLİ Kontrol	Gözetim ÜRÜNLERİ Kontrol

MİLLÎ EĞİTİM BAKANLIĞI T.C. MİLLÎ ARAŞTIRMA VE TEKNOLOJİ AKADEMİSİ

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